UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,068	11/14/2003	Meng Yang	312762002710	2630

25225 7590 09/28/2006

MORRISON & FOERSTER LLP
12531 HIGH BLUFF DRIVE
SUITE 100
SAN DIEGO, CA 92130-2040

EXAMINER	
QIAN, CELINE X	
ART UNIT	**PAPER NUMBER**
1636	

DATE MAILED: 09/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/714,068	YANG ET AL.	
	Examiner	Art Unit	
	Celine X. Qian Ph.D.	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-34 and 37-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-34 and 37-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *0404*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 20-34, 37-40 are pending in the application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 20-23, 25-29, 37 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Contag et al (US 5,650,135, see IDS).

The claims are drawn to a method of to evaluate a candidate protocol or drug for treating a disease or disorder by administering said protocol or drug to a non-human mammalian animal which expresses a fluorophore under the direction of a promoter of a gene associated with said disease or disorder, and determining the expression of said gene via observing the presence, absence or intensity of the fluorescence generated by said fluorophore at various locations in said mammalian subject by whole body external fluorescent optical imaging, and comparing it to a control non-human animal. The claims are further drawn to said method, wherein the non-human mammalian animal that expresses a fluorophore, for example, a GFP, is generated by administering a nucleic acid encoding the fluorophore operatively linked to the promoter of the gene, or delivering a cell containing said nucleic acid, or a transgenic animal. Claims 37 and 38 are drawn to a method for a modulator of the expression of a gene in a multi-cellular organism by the above mentioned method steps.

Contag et al. disclose a method of evaluate drug for treating a disease by by administering said protocol or drug to a non-human mammalian animal which expresses a fluorophore under the direction of a promoter of a gene associated with said disease or disorder, and determining the expression of said gene via observing the presence, absence or intensity of the fluorescence generated by said fluorophore at various locations in said mammalian subject by whole body external fluorescent optical imaging, and comparing it to a control non-human animal (see for example, col. 3, lines 59-61). Contag et al. also disclose that the fluorophore such as GFP may be used (see col. 9, lines 29-32). Contag et al. further disclose that the nucleic acid comprising the promoter and a fluorophore may be introduced to said non-human animal (see col.3-4, bridging paragraph), or transgenic animal comprising a transgene having the promoter and the fluorophore may be used (see col.4, lines 17-21). Contag et al. also disclose said method can screen modulator, such as a promoter activator (see col.4, lines 6-9). Contag et al. also disclose using cells, such as Salmonella, transformed to express fluorophore, in animal models of human diseases (see col. 25, lines 48-65). Therefore, Contag et al. disclose the instantly claimed inventions.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 20-34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant

art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The written description requirement is set forth by 35 U.S.C. 112, first paragraph which states that the: "*specification* shall contain a written description of the invention. . .[emphasis added]." The written description requirement has been well established and characterized in the case law. A specification must convey to one of skill in the art that "as of the filing date sought, [the inventor] was in possession of the invention." See *Vas Cath v. Mahurkar* 935 F.2d 1555, 1560 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). Applicant may show that he is in "possession" of the invention claimed by describing the invention with all of its claimed limitations "by such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention." See *Lockwood v. American Airlines Inc.* 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997).

In analyzing whether the written description requirement is met, it is first determined whether a representative number of species have been described by their complete structure. Next, it is determined whether a representative number of species have been sufficiently described by other relevant identifying characteristics. The claims recite "a promoter of a gene associated with a disease or disorder" and "the promoter is derived from an infectious organism." The claimed genus of "a promoter of a gene associated with a disease" encompasses a potentially large group of promoters of genes that are supposedly associated with a disease or disorder so that therapy or drugs may be evaluated for regulating said promoter activity. However, the specification fails to disclose any of such promoters which can be used for the claimed purpose, identifying drug or protocol. The specification listed in Table 1 of oncogenes and tumor viruses.

However, the specification does not disclose whether promoter from said oncogenes or tumor viruses may be used in the context of claimed method for evaluating drugs or protocols. The art recognizes there are specific genes that are associated with specific disease. However, even all of the promoters from said genes are isolated and operably linked to a fluorescent reporter, whether it can be used to evaluate a candidate protocol or drug is unpredictable. For example, a compound which can cause a decrease in the expression of an oncogene does not necessary mean it may be used to treat cancer. Furthermore, the claims are directed to using promoter of any gene that is associated with any type of disease, including promoters derived from infectious organism. The instant specification does not describe such promoter to use in the claimed method. Since the specification fails to describe this genus of promoter, it fails to describe the non-human mammalian subject comprise said promoter operably linked to a fluorophore. As such, the specification fails to describe a representative number of claimed invention by their complete structure or other identifying characteristics. Therefore, the written description requirement is not met.

Claims 39 and 40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue." These factors include, but are not

limited to: (a) the nature of the invention; (b) the breadth of the claims; (c) the state of the prior art; (d) the amount of direction provided by the inventor; (e) the existence of working examples; (f) the relative skill of those in the art; (g) whether the quantity of experimentation needed to make or use the invention based on the content of the disclosure is "undue"; and (h) the level of predictability in the art (MPEP 2164.01 (a)).

The nature of the invention:

The claims are drawn to a method to screen for a multi-cellular organism that expresses a gene at an altered level, by administering a mutation inducing agent or treatment to a non-human multi-cellular organism which expresses a fluorophore under the direction of a promoter of a gene, and determining the expression of said promoter, wherein a difference between the expression of said promoter and a control indicates the gene expression is altered.

The breadth of the claim and the teaching of the specification:

The breadth of the claims is rather broad. The claims are drawn to any non-human multi-cellular organism comprising any gene promoter linked to a fluorophore, and use any type of mutation inducing agent. The instant specification does not teach or providing a working example in which the method is carried out, either by using a transgenic multi-cellular organism or multi-cellular organism injected with said nucleic acid. Therefore, the instant specification provides no guidance in how to carry out the claimed method.

The state of art and level of predictability in the art:

The state of art at the time of filing is silent on the teaching of how to practice the claimed method. While the art teaches many mutation-inducing agent, it does not teach how to induce a mutation in a specific gene promoter in a multi-cellular organism without affecting

other gene product. In the whole animal system, the change in the intensity of the fluorophore may be the result of interaction with other gene product. Thus, whether the change of expression is an indication of the altered gene expression level is unpredictable.

In view of the lack of teaching from the prior art and lack of guidance provided by the instant specification, one of skilled in the art would have to engage in undue experimentation to practice the method as claimed. Therefore, the instant specification fails to enable the claimed invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 24, 30-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 24 recites the word "derived." Such recitation renders the claim indefinite because the nature and number of derivative process is unknown. It is unclear what structure constitutes the infectious organism derived promoter after the derivative process. As such, the metes and bounds of the claim cannot be determined. Claims 30-34 are rejected for same reason because of their dependence on claim 24.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Celine X. Qian Ph.D. whose telephone number is 571-272-0777. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel Ph.D. can be reached on 571-272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Celine X Qian Ph.D.
Examiner
Art Unit 1636

CELINE QIAN, Ph.D.
PRIMARY EXAMINER